Norplex/OAK - Postville, IA

IAD073489288

Date mailed: October 14, 1987

Date received: October 16, 1987

Response received: November 5, 1987

Categorization: 1

Norplex-OAK of Postville, IA generates F003 and F005 spent solvent wastes as a result of the various manufacturing processes occuring at the facility. According to the manifests provided for the period between July 1987 to October 1987, the facility generates 900 lbs/month F003 waste and 31,800 lbs/month F005 waste. The waste is shipped to Waste Research and Reclamation for reclamation or disposal. The waste analysis and MSDS sheets indicate that the F003 waste is primarily acetone, methanol, and n-butyl alcohol. The F005 waste is primarily methyl ethyl ketone and toluene. With the October 7, 1987 shipment of F003 and F005 waste to Waste Research and Reclamation, the facility began to include generator notifications and treatment standards as required by 40 CFR 268.7.

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Mr. Chuck Englebert
Norplex Div. Signal Appl. Tech
P O Box 445
Postville, IA 52162

RE: Request for Information

Norplex Div. Signal Appl. Tech
Postville
IAD073489288

REQUEST FOR INFORMATION

Dear Mr. Englebert:

Under Section 3007 of the Resource Conservation and Recovery Act (RCRA), Title 42 U.S.C. Section 6927, the Environmental Protection Agency (EPA) may require you to furnish information relating to your wastes and waste management practices. Pursuant to Section 3007 of RCRA, for the purposes of determining compliance and possible enforcement, EPA hereby requires that you respond to the following questions in writing within fifteen (15) days of receipt of this letter.

Sections 3004 (d) through (k) and (m) and Section 3005 (j) of RCRA, 42 U.S.C. Section 6924 (d) through (k) and (m) and Section 6925 (j), require the EPA to ban, subject to limitations, or restrict the land disposal of hazardous waste. Prohibitions and restrictions on the management of wastes containing specified solvents became effective on November 7, 1986 (51 Federal Register pg. 40636; November 7, 1987). These prohibitions and restrictions are set forth in 40 CFR Part 268 and in revisions to 40 CFR 260 through 265 and 270.

Your facility has notified the EPA pursuant to the requirements of RCRA that you facility manages hazardous waste as either a generator, transporter, and/or treatment, storage, and disposal facility. These wastes are potentially affected by the new land ban regulations.

Definitions

"You" or "your" refers to your facility, including its officers, employees, and consultants.

A solvent is defined as a substance used to solubilize (dissolve) or mobilize other constituents. A solvent is considered "spent" when it has been used and is no longer fit for use without being regenerated, reclaimed, or otherwise reprocessed. Examples of spent solvents include solvents that are being used as degreasers, cleaners, fabric scourers, diluents, extractants, and reaction and synthesis media. Manufacturing process wastes containing solvents are not spent solvents.

The definitions in RCRA and the RCRA regulations, 40 CFR Parts 260-271 apply.

Information Requested

1. The name of the person with your facility to contact regarding this request, including title, address, and telephone number.

2. State whether at any time after November 7, 1986, you generated, transported, treated, stored, and/or disposed of 1) F001, F002, F003, F004, and/or F005 wastes as defined at 40 CFR Part 261.31, and/or 2) D001 wastes as defined at 40 CFR 261.21, and/or 3) a mixture of any of the aforementioned wastes. If you are unable, based upon information immediately available to you, to determine the designation of your waste, provide information concerning solvent type wastes that you have generated or handled. Examples of solvent type wastes are given in the definitions section of this letter.

3. For each waste identified above, give the rate of generation in pounds per month (lbs./month).

4. For each waste identified above, please provide all chemical analyses, Material Safety Data Sheets, manufacturers information, and any other information used to characterize the waste.

5. For each waste identified above, provide a brief description of the generation, transportation, treatment, storage and/or disposal process(es).

6. For each waste identified above, provide information concerning how the waste was managed from the time the waste was generated or came into your possession up to its final disposition or the time the waste left your possession. This should include copies of all manifests, treatment standard notifications and certifications, servicing agreements, bills of lading, and invoices.

You may, if you desire, assert a business confidentiality claim covering part or all of the information submitted to, or reviewed by, EPA. Such a claim may be made by placing on (or attaching to) the information, at the time of its submittal to, or review by, EPA, a cover sheet, stamped or printed legend, or other suitable form of notice employing language such as "trade secret," "proprietary," or "company confidential." Allegedly confidential portions of otherwise non-confidential documents should be clearly identified and may be submitted separately to facilitate identification and handling by EPA. If confidential treatment is sought only until a certain date or until the occurrence of a certain event, the request should so state.

Information submitted for which a claim of confidentiality is made will be disclosed by EPA only to the extent and by the means authorized by the procedures specified in 40 CFR Part 2, Subpart B (1985), as amended by 50 Federal Register 51654 December 18, 1985. If no such claim is made when information is received by EPA, the information may be made available to the public without further notice.

Please note that you are required to submit this information within fifteen (15) days of receipt of this letter. The response must be submitted to Jacobs Engineering Group Inc., a designated contractor to the EPA. Specifically, you should submit your response to :

Jacobs Engineering Group Inc.
Attn: Terry Hagen
8207 Melrose Drive, Suite 114
Lenexa, KS 66214

Should you require a longer period to respond to the information request, you may be granted, by EPA, a one-time extension of 15 days. To request an extension you must contact your EPA RCRA State Coordinator, Jim Callier or Beth Koesterer, at 913/236-2887.

Failure to respond to these questions within 15 days of receipt of this letter may subject you to an enforcement action under Section 3008 of RCRA, 42 U.S.C. Section 6928. Such enforcement action may include the assessment of penalties of up to $25,000 for each day of noncompliance.

Should you have any questions concerning this matter, please contact Terry Hagen or Carla Rellergert at 913/492-9218.

Sincerely yours,

David A. Wagoner
Director
Waste Management Division

TO TERRY HAZE

RE
REGION 2

NOV 05 1987

SUBJECT

ATT

MORPLEX / OAK
Allied Signal

Dennis Ford
Superintendent Engineering and Maintenance

N.E. County Road
P.O. Box 370
Postville, Iowa 52162
Telephone: 319-864-7321

TERRY, PLEASE FIND ENCLOSED MSDS SHEETS, WASTE MANIFEST CHEMICAL ANAYSIS SHEETS FOR OUR WASTE

IF YOU HAVE ANY QUESTIONS OR WOULD LIKE ADDITIONAL INFORMATION PLEASE GIVE ME A CALL

PLEASE REPLY TO ⟶ SIGNED Dennis Ford

RECEIVED
NOV 16 1987
IOWA SECTION

STATE OF WISCONSIN
Form 4400-66 Rev. 7-85
Chapter 144, Wis. Stats.

Mail Copies 1 & 3 To: State of Wisconsin
Department of Natural Resources
Bureau of Solid Waste Mgt.
Box 8094
Madison, Wisconsin 53708

RECEIVED
NOV 05 1987

FOR DNR USE ONLY

Please print or type. Form designed for use on elite (12-pitch) typewriter. SEE INSTRUCTIONS ON REVERSE SIDE OF COPY 6.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. IAD073489288
Manifest Document No. 0007
2. Page 1 of 1
Information in the shaded area is not required by Federal law.

3. Generator's Name and Mailing Address
Norplex-Oak
PO Box 370
Postville, Iowa 52162
4. Generator's Phone (319) 864-7321

A. State Manifest Document Number WI 65458
B. State Generator's ID

5. Transporter 1 Company Name: Waste Research + Reclamation
6. US EPA ID Number: WID990829475
C. State Transporter's ID
D. Transporter's Phone (715) 834-9624

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Waste Research + Reclamation
Route 7
Eau Claire, Wis. 54701
10. US EPA ID Number: WID990829475
G. State Facility's ID
H. Facility's Phone (715) 834-9624

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Flammable Liquid NOS. Flammable Liquid, UN 1993	8	DM	3200 400	P G	F001
b. Waste Combustible Liquid NOS. Flammable Liquid, NA 1993	1	DM	400 50	P G	F003
c. Waste Combustible Liquid NOS. Flammable Liquid, NA 1993	1	DM	400 50	P G	F005
d. Waste Flammable Liquid NOS. Flammable Liquid, UN 1993	72	DM	28,800 3600	P G	F001

J. Additional Descriptions for Materials Listed Above
a) Lab ID# 1-03216 c) Lab ID# 1-03214
b) Lab ID# 6-01049 d) Lab ID# 1-03215

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations and according to the requirements of the Wisconsin Department of Natural Resources. Unless I am a small quantity generator who has been exempted by statute or regulation for the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment

GENERATOR

Printed/Typed Name & Position Title: James Gilbert Plant Manager
Signature: James Gilbert (For Norplex/Oak)
Date: Month Day Ye 11 7 88

TRANSPORTER

17. TRANSPORTER 1 Acknowledgement of Receipt of Materials
Printed/Typed Name & Position Title: John PRICE, DRIVER
Signature
Date: Month Day Ye 11 7 88

18. TRANSPORTER 2 Acknowledgement of Receipt of Materials
Printed/Typed Name & Position Title
Signature
Date: Month Day Ye

FACILITY

19. Discrepancy Indication Space

20. FACILITY OWNER OR OPERATOR: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name & Position Title
Signature
Date: Month Day Ye

Emergency 24 Hour Assistance Telephone Number
In Wisconsin (608-266-3232)
Outside Wisconsin (800-424-8802)

COPY 2

Copy Distribution: 1 — BSWM 4 — Facility
2 — Generator 5 — Generator
3 — BSWM 6 — Transporter
BSWM Copies 1 & 3 mail to Wis. DNR at above addr

STATE OF WISCONSIN
Form 4400-66 Rev. 7-85
Chapter 144, Wis. Stats.

Mail Copies 1 & 3 To: State of Wisconsin
Department of Natural Resources
Bureau of Solid Waste Mgt.
Box 8094
Madison, Wisconsin 53708

RECEIVED
REGION VII
NOV 05 1987

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. IAD073489288 Manifest Document No. 00008

2. Page 1 of 1

Information in the shaded area is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
Norplex-Oak
P.O. Box 370
Postville, Iowa
4. Generator's Phone (319) 864-7321

A. State Manifest Document Number WI 65459

B. State Generator's ID

5. Transporter 1 Company Name: Waste Research + Reclamation
6. US EPA ID Number: WID990829475
C. State Transporter's ID
D. Transporter's Phone (715) 834-9624

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Waste Research + Reclamation
Route 7
Eau Claire, Wis. 54701
10. US EPA ID Number: WID990829475
G. State Facility's ID
H. Facility's Phone (715) 834-9624

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Flammable Liquid NOS. Flammable Liquid, UN 1993	1	DM	400	P	
			50	G	F005
b. Waste Flammable Liquid NOS. Flammable Liquid, UN 1993	77	DM	39,800	P	
			3850	G	F005
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a) Lab ID# 1-03216
b) Lab ID# 1-03215

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

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Printed/Typed Name & Position Title: James Gilbert Plant Manager
Signature: James Gilbert (For Norplex/Oak)
Date: Month 08 Day 27 Ye 87

TRANSPORTER

17. TRANSPORTER 1 Acknowledgement of Receipt of Materials
Printed/Typed Name & Position Title: Terry Schuh Driver
Signature: Terry Schuh
Date: Month 08 Day 27 Ye 87

18. TRANSPORTER 2 Acknowledgement of Receipt of Materials
Printed/Typed Name & Position Title
Signature
Date: Month Day Ye

FACILITY

19. Discrepancy Indication Space

20. FACILITY OWNER OR OPERATOR: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name & Position Title
Signature
Date: Month Day Ye

Emergency 24 Hour Assistance Telephone Number
In Wisconsin (608-266-3232)
Outside Wisconsin (800-424-8802)

COPY 2

Copy Distribution: 1 — BSWM 4 — Facility
2 — Generator 5 — Generator
3 — BSWM 6 — Transporter
BSWM Copies 1 & 3 mail to Wis. DNR at above addre

STATE OF WISCONSIN
Form 4400-66 Rev. 7-85
Chapter 144, Wis. Stats.

Mail Copies 1 & 3 To: State of Wisconsin
Department of Natural Resources
Bureau of Solid Waste Mgt
P.O. Box 8094
Madison, Wisconsin 53708

FOR DNR USE ONLY
NOV 05 1987

Please print or type. Form designed for use on elite (12-pitch) typewriter. SEE INSTRUCTIONS ON REVERSE SIDE OF COPY 6

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No: IA0073489288 | Manifest Document No: 00009
2. Page 1 of 1
Information in the shaded ar is not required by Federal law

3. Generator's Name and Mailing Address
Norplex-Oak
P.O. Box 370
Postville, Iowa 52162
4. Generator's Phone (319) 864-7321

A. State Manifest Document Number: WI 65460
B. State Generator's ID

5. Transporter 1 Company Name: Waste Research + Reclamation
6. US EPA ID Number: WI0990829475
C. State Transporter's ID
D. Transporter's Phone: (715) 834-96

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Waste Research + Reclamation
Route 7
Eau Claire, Wis 54701
10. US EPA ID Number: WI0990829475
G. State Facility's ID
H. Facility's Phone: (715) 834-9624

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No
a. Waste Flammable Liquid NOS. Flammable Liquid, UN 1993	1	DM	400 55	P G	F00
b. Waste Combustible Liquid NOS. Flammable Liquid, NA 1993	1	DM	400 55	P G	F00
c. Waste Combustible Liquid NOS. Flammable Liquid, NA 1993	4	DM	1600 220	P G	F00
d. Waste Flammable Liquid NOS. Flammable Liquid, UN 1993	78	DM	31,200 3900	P G	F00

J. Additional Descriptions for Materials Listed Above
a) Lab ID# 1-03216 c) Lab ID# 1-03214
b) Lab ID# 6-01049 d) Lab ID# 1-03215

K. Handling Codes for Wastes Listed Ab

15. Special Handling Instructions and Additional Information

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Printed/Typed Name & Position Title	Signature	Date Month Day
James Gilbert Plant Manager	James Gilbert (For Norplex/Oak)	09 23

TRANSPORTER

17. TRANSPORTER - Acknowledgement of Receipt of Materials

Printed/Typed Name & Position Title	Signature	Date Month Day
Terry Schuh Driver	Terry Schuh	09 23

18. TRANSPORTER 2 Acknowledgement of Receipt of Materials

Printed/Typed Name & Position Title	Signature	Date Month Day

FACILITY

19. Discrepancy Indication Space

20. FACILITY OWNER OR OPERATOR: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name & Position Title	Signature	Date Month Day

Emergency 24 Hour Assistance Telephone Number
In Wisconsin (608-266-3232)
Outside Wisconsin (800-424-8802)

COPY 2

Copy Distribution: 1 — BSWM 4 — Facility
2 — Generator 5 — Generator
3 — BSWM 6 — Transporter
BSWM Copies 1 & 3 mail to Wis. DNR at above ad

STATE OF WISCONSIN
Form 4400-66 Rev. 7-85
Chapter 144, Wis. Stats.

Mail Copies 1 & 3 To: State of Wisconsin
Department of Natural Resources
Bureau of [illegible] Waste Mgt.
Box 8094
Madison, Wisconsin 53708

FOR DNR USE ONLY

RECEIVED REGION VII
NOV 05 1987

Please print or type. Form designed for use on elite (12-pitch) typewriter. SEE INSTRUCTIONS ON REVERSE SIDE OF COPY 6.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: IAD073489288
Manifest Document No.: 00010
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Norplex-Oak
P.O. Box 370
Postville, Iowa 52162
4. Generator's Phone (319) 864-7321

A. State Manifest Document Number: WI 65461
B. State Generator's ID:

5. Transporter 1 Company Name: Waste Research & Reclamation
6. US EPA ID Number: WID990829475
C. State Transporter's ID:
D. Transporter's Phone: (715) 834-962

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
Waste Research & Reclamation
Route 7
Eau Claire, Wis. 54701
10. US EPA ID Number: WID990829475
G. State Facility's ID:
H. Facility's Phone: (715) 834-9624

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Combustible Liquid NOS, Flammable Liquid, NA 1993	2	DM	800 100	P G	F003
b. Waste Flammable Liquid NOS, Flammable Liquid, UN 1993	81	DM	32,400 4050	P G	F005
c.					
d.					

J. Additional Descriptions for Materials Listed Above
a) Lab ID# 1-03214
b) Lab ID# 1-03215

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION. I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations and according to the requirements of the Wisconsin Department of Natural Resources. Unless I am a small quantity generator who has been exempted by statute or regulation for the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name & Position Title: James Gilbert Plant Manager
Signature: James Gilbert (For Norplex Oak)
Date: Month Day Year

TRANSPORTER

17. TRANSPORTER 1 Acknowledgement of Receipt of Materials
Printed/Typed Name & Position Title: Dennis Hamman Driver
Signature: Dennis Hamman
Date: Month 10 Day 07 Year 87

18. TRANSPORTER 2 Acknowledgement of Receipt of Materials
Printed/Typed Name & Position Title:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. FACILITY OWNER OR OPERATOR: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name & Position Title:
Signature:
Date: Month Day Year

Emergency 24 Hour Assistance Telephone Number
In Wisconsin (608-266-3232)
Outside Wisconsin (800-424-8802)

COPY 2

Copy Distribution: 1 — BSWM 4 — Facility
2 — Generator 5 — Generator
3 — BSWM 6 — Transporter
BSWM Copies 1 & 3 mail to Wis. DNR at above addres

GENERATOR NOTIFICATION
TO WASTE RESEARCH & RECLAMATION CO., INC.
REGARDING SHIPMENT OF WASTES RESTRICTED
FROM LAND DISPOSAL UNDER 40 CFR 268.7(a)(1)

This notification is submitted by NORPLEX/OAK to Waste Research & Reclamation Co., Inc. in accordance with the Land Disposal Restrictions, Final Rule (effective Nov. 8, 1986) under 40 CFR 268.7(a)(1). According to this final rule, generators of EPA Hazardous Waste Numbers F001 to F005 must provide the following information with each shipment delivered to Waste Research & Reclamation Co., Inc.:

1. EPA Hazardous Waste Number(s): IAD073489288

2. Corresponding Treatment Standard (see below).

3. Manifest number associated with this shipment: WI 6541 61

4. Waste Research & Reclamation Co. Sample ID Number: _____

CORRESPONDING TREATMENT STANDARD

Instructions: For each solvent waste constituent present in this waste or its extract, check the appropriate box in front of the treatment standard(s) which apply.

Solvent Constituent	Treatment Standard (mg/liter)			
	Wastewaters containing spent solvents		All other spent solvent wastes	
Acetone		0.05	X	0.59
n-Butyl alcohol		5.0	X	5.0
Carbon disulfide		1.05		4.81
Carbon tetrachloride		0.05		0.96
Chlorobenzene		0.15		0.05
Cresols and cresylic acid		2.82		0.75
Cyclohexanone		0.125		0.75
1,2-Dichlorobenzene		0.65		0.125
Ethyl acetate		0.05		0.75
Ethyl benzene		0.05		0.053
Ethyl ether		0.05		0.75
Isobutanol		5.0		5.0
Methanol		0.25	X	0.75
Methylene chloride		0.20		0.96
Methylene chloride (from the pharamaceutical industry)		12.7		0.96
Methyl ethyl ketone		0.05	X	0.75
Methyl isobutyl ketone		0.05		0.33
Nitrobenzene		0.66		0.125
Pyridine		1.12		0.33
Tetrachloroethylene		0.079		0.05
Toluene		1.12	X	0.33
1,1,1-Trichloroethane		1.05		0.41
1,1,2-Trichloroethane		1.05		0.96
Trichloroethylene		0.062		0.091
Trichlorofluoromethane		0.05		0.96
Xylene		0.05		0.15

WRR

LABORATORY REPORT OF INCOMING MATERIALS for Load #74010 Received 10/07/87 Date 10/21/87

WASTE RESEARCH and RECLAMATION CO., INC
Route 7 Eau Claire, Wisconsin 54701 Phone (715)834-9624

Source: NORPLEX (OAK)

Dear Customer:

Each container of this load of waste material has been sampled and analyzed. From the test result, the waste materials are grouped according to their similarity in chemical nature as follows:

EPA ID No. IAD073489288
Manifest M-#00010

Group / Material Description	Containers	Mat Qty	Remarks & Chemical Analysis	%	% Rec	Recy Qty	Disp Qty	Est Recov	Waste Charges/Credits Invoice Notes	
A COMBUSTIBLE LIQUID(DD)	1 2	2 Drm	WATER TOLUOL ALCOHOLS WATER WITH SOLVENT	75 5 20			2 Drm		2 @ $120 =	$240.0
B FLAMMABLE LIQUID(DD)	3 7-9 12 13 16 18 20 24-26 30 32 33 35 39 44 46 49-54 57 65 71 77 78	30 Drm	TOLUOL METHANOL ETHANOL ESTERS 1 PARTIALLY SOLID DRUMS TOTAL = 0.2	44 33 22 1	70%		29.8 0.2 Drm		29.8 @ $50 = 0.2 @ $210 =	$1490.0 $42.0
C FLAMMABLE LIQUID(DD)	4 6 10 11 17 19 21-23 27 28 31 36 39 41-43 45 47	29 Drm	TOLUOL METHANOL ETHANOL	49 15 36	70%		29 Drm		29 @ $50 =	$1450.(
D FLAMMABLE LIQUID(DD)	5 48 56	3 Drm	TOLUOL ETHANOL METHANOL ISOPROPYL ACETATE	24 49 11 16	50%		3 Drm		3 @ $100 =	$300.(
E FLAMMABLE LIQUID(DD)	15 29 34 37 40 55 62-64 66 67 75 79 81	14 Drm	TOLUOL ETHANOL METHANOL ESTERS WATER 1 PARTIALLY SOLID DRUMS TOTAL = 0.3 HIGH WATER CONTENT	51 18 14 2 15	60%		13.7 0.3 Drm		13.7 @ $75 = 0.3 @ $210 =	$1027.5 $63.(
F FLAMMABLE LIQUID(DD)	14	1 Drm	UNPUMPABLE SOLIDS TO BLEND FOR INCINERATION CONTAINS SOLVENTS SIMILAR TO GROUP D				1 Drm		1 @ $210 =	$210.
G FLAMMABLE LIQUID(DD)	80 83	2 Drm	CONTAINS SOLVENTS SIMILAR TO GROUP B		70%		2 Drm		2 @ $50 =	$100.

WRR

H FLAMMABLE LIQUID(DD)	76 82	2 Drm	CONTAINS SOLVENTS SIMILAR TO GROUP C INVOICE #710265	70%	2 Drm	2 @ $50 =	$100.0

Handling Charge $1037.5

83 Samples were taken for chemical analysis. Total = $6060.00

ESTIMATED RECOVERY: For a small batch of materials, the estimated recovery may be less than "% of Recovery" in the lab distillation. However, the waste charge is based on the % Rec (Recovery).

RECYCLABLE QUANTITY: The pumpable part of the spent material.

DISPOSAL QUANTITY: Solids, waste water, thick materials and chloro-flammable mixtures which cannot be recycled as a usable produc

WRR

LABORATORY REPORT OF INCOMING MATERIALS for Load #72722 Received 07/08/87 Date 08/03/87

WASTE RESEARCH and RECLAMATION CO., INC
Route 7 Eau Claire, Wisconsin 54701 Phone (715)834-9624

Source: NORPLEX (DAK)

Dear Customer:

Each container of this load of waste material has been sampled and analyzed. From the test result, the waste materials are grouped according to their similarity in chemical nature as follows:

EPA ID No. IAD073489288
Manifest M-#00017

Group / Material Description	Containers	Mat Qty	Remarks & Chemical Analysis	%	% Rec	Recy Qty	Disp Qty	Est Recov	Waste Charges/Credit Invoice Notes
A FLAMMABLE LIQUID(DD)	2	1 Drm	ACETONE	59	30%		1 Drm		1 @ $150 = $150.
			TOLUOL	19					
			N-PROPYL ACETATE	14					
			ALCOHOLS	8					
B FLAMMABLE LIQUID(DD)	7	1 Drm	WATER	60					1 @ $120 = $120.
			CONTAINS SOLVENTS SIMILAR TO						
			GROUP C 40%				1		
			HIGH WATER MATERIAL				Drm		
FLAMMABLE LIQUID(DD)	16 19 20	3 Drm	Acetone	55	35%		3 Drm		3 @ $150 = $450.
			N-PROPYL ACETATE	25					
			ALCOHOLS	11					
			TOLUOL	9					
D FLAMMABLE LIQUID(DD)	15	1 Drm	ACETONE	48	50%		1 Drm		1 @ $100 = $100.
			N-PROPYL ACETATE	20					
			ALCOHOLS	22					
			TOLUOL	10					
E COMBUSTIBLE LIQUID(DD)	32	1 Drm	WATER	98			1 Drm		1 @ $120 = $120.
			ACETONE	1					
			ALCOHOLS	1					
			HIGH WATER MATERIAL						
F COMBUSTIBLE LIQUID(DD)	9	1 Drm	WATER	94			1 Drm		1 @ $120 = $120.
			ACETONE	3					
			ALCOHOLS	1					
			ESTERS	2					
			HIGH WATER MATERIAL						
B FLAMMABLE LIQUID(DD)	56 76	2 Drm	TOLUOL	41	50%		2 Drm		2 @ $50 = $100.
			ALCOHOLS	26					
			ACETONE	22					
			N-PROPYL ACETATE	11					
F FLAMMABLE LIQUID(DD)	17 78	2 Drm	WATER	70					2 @ $120 = $240.
			CONTAINS SOLVENTS SIMILAR TO						
			GROUP E 30%				2		
			HIGH WATER MATERIAL				Drm		

WRR

I	FLAMMABLE LIQUID(DD)	42 59 62	3 Drm	WATER CONTAINS SOLVENTS SIMILAR TO GROUP 6 40% HIGH WATER MATERIAL	60		3 Drm	3 @ $120 = $360.00
J	FLAMMABLE LIQUID(DD)	26	1 Drm	WATER CONTAINS SOLVENTS SIMILAR TO GROUP 6 40% HIGH WATER MATERIAL	60		1 Drm	1 @ $120 = $120.00
K	FLAMMABLE LIQUID(DD)	3-5 8 10-15 21-25 27-31 33-45 48 49 52-55 57 58 60 61 63-75	63 Drm	TOLUOL ACETONE ALCOHOLS ESTERS	51 36 9 2	65%	63 Drm	63 @ $50 = $3150.00
L	FLAMMABLE LIQUID(DD)	56	1 Drm	TOLUOL ACETONE ALCOHOLS ESTERS	56 34 9 1	60%	1 Drm	1 @ $75 = $75.00
M	FLAMMABLE LIQUID(DD)	1 51	2 Drm	TOLUOL ACETONE ALCOHOLS ESTERS XYLOL METHYL ETHYL KETONE INVOICE #70727E	38 38 17 5 1 1	50%	2 Drm	2 @ $100 = $200.00

Handling Charge $1025.

Total = $5330.00

8 Samples were taken for chemical analysis.

ESTIMATED RECOVERY: For a small batch of materials, the estimated recovery may be less than "% of Recovery" in the lab distillation. However, the waste charge is based on the % Rec (Recovery).

RECYCLABLE QUANTITY: The pumpable part of the spent material.

DISPOSAL QUANTITY: Solids, waste water, thick materials and chloro-flammable mixtures which cannot be recycled as a usable prod

010364

MATERIAL SAFETY DATA SHEET

Epi-Rez ®2483

CELANESE SPECIALTY RESINS
A Division of Celanese Corporation
10100 Linn Station Road / P.O. Box 37600
Louisville, Kentucky 40233

HMIS: Health- 2 Fire- 4 Reactivity- 0
Date Issued: 09/27/85 Supersedes: 03/13/85

Emergency Phone Number (502) 585-8667 (if no answer, (502) 585-8

I. IDENTIFICATION & PHYSICAL DATA

Product Name: Epi-Rez 2483

Product Class: Brominated Epoxy Resin Solution

Manufacturer's I.D. : 27T029

D.O.T. Hazard Class: Flammable Liquid
D.O.T. Shipping Name: Resin Solution
D.O.T. UN Number: UN 1866

Evaporation Rate: Faster than Butyl Acetate

Percent Volatile by Volume: 31

Boiling Range: >133 F

Vapor Density: Heavier than air

Weight Per Gallon: 10.2 lb.

Vapor Pressure at 20 C: <185.0 mm Hg

Solubility in Water: Partially Soluble

Appearance and Odor: Clear light colored viscous liquid with characteristic solvent odor

II. HAZARDOUS INGREDIENTS

	CAS #	WT. %	OSHA PEL ppm	TWA TLV ppm	STEL TLV ppm
Brominated epoxy resin	**	80	---	---	---
Acetone	67-64-1	20	1000	750	1000

**The specific chemical indentity is being withheld as a trade secret.
---Not established

III. FIRE & EXPLOSION DATA

Flashpoint: 0 F Setaflash

LEL: <2.6 est.

Extinguishing Media:

Use carbon dioxide or dry chemical for small fires; aqueous foam or water for large fires.

Unusual Fire & Explosion Hazards:

Highly flammable; escaping vapors may ignite which can result in an explosion and flash fire. Closed containers may explode (due to the buildup of pressure) when exposed to extreme heat.

Special Fire Fighting Procedures:

Wear self-contained breathing apparatus and complete personal protective equipment. Remove all ignition sources. Use a water spray to cool fire exposed containers.

IV. REACTIVITY DATA

Stability: Stable

Hazardous Polymerization: Will not occur

Conditions to Avoid:

Excessive heat.

Materials to Avoid:

Contamination with strong acids, bases, amines, or mercaptans can cause polymerization.

Hazardous Decomposition Products:

Fumes produced when heated to decomposition may include: carbon monoxide, carbon dioxide, hydrogen bromide, and bromine.

V. HEALTH HAZARD DATA

Effects of Overexposure:

Ingestion: No specific information available.

Contains materials that may be slightly toxic.

Inhalation: No specific information available.

Contains materials that have the potential to cause headaches, nausea, dizziness, and respiratory irritation if inhaled.

Skin Absorption: No specific information available.

Contains materials that may be slighty toxic.

Skin Contact: No specific information available.

Contains materials that may cause moderate skin injury (reddening and swelling). Sensitizer - may cause allergic skin reaction which can be severe in certain individuals.

Eye Contact: No specific information available.

Contains materials that may cause severe eye injury -- damage reversible.

Chronic Effects of Overexposure:

No specific information available.

Emergency & First Aid Procedures:

Eye Contact:

Flush with plenty of water for at least 15 minutes and seek medical attention.

Skin Contact:

Remove contaminated clothing and wash contact area with soap and water for 15 minutes.

Ingestion:

If appreciable quantities are swallowed, seek medical attention.

Inhalation:

In case of exposure to a high concentration of vapor or mist, remove person to fresh air. If breathing has stopped, administer artificial respiration and seek medical attention.

VI. SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material Is Released or Spilled:

Dike spill. Absorb with inert material and collect for disposal. Flush area with water. Prevent washings from entering waterways. Uncontrolled spills which exceed 100 pounds may be reportable to the National Response Center (800-424-8802).

Waste Disposal Method:

Incinerate or use biological treatment in accordance with federal, state, and local regulations. This material is a hazardous waste under current RCRA regulations because of ignitability.

VII. SPECIAL PROTECTION INFORMATION

Respiratory Protection:

Wear a properly fitted NIOSH/MSHA approved respirator whenever exposure to vapor/mist is likely unless levels are below applicable limits.

Ventilation:

Local Exhaust - Recommended when appropriate to control employee exposure.

Mechanical - Not recommended as the sole means of controlling employee exposure.

Protective Gloves: For operations where contact can occur, wear impervious gloves (Neoprene).

Eye Protection: Chemical splash goggles.

Other Protective Equipment: For operations where contact can occur, a safety shower and eye wash facility should be available.

VIII. SPECIAL PRECAUTIONS

Avoid contamination of skin. Do not apply to hot surfaces or use in areas where exposed to electric sparks. Keep away from fire and open flame. Ground containers when transferring from one to another.

MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form OSHA-20)

Reichhold Chemicals, Inc.
525 North Broadway, White Plains, N.Y. 10603

REICHHOLD®
PERFORMANCE TECHNOLOGY

INFORMATION TELEPHONE NO (914) 682-5700

REVISION DATE 12/85

EMERGENCY PHONE NUMBER • **800-423-3003** / **800-442-4844**
(in continental U.S. — except N.Y.) / (in N.Y. State)

• These numbers are available days, nights, weekends, and holida

Section I — IDENTIFICATION

PRODUCT NAME: PLYOPHEN 94-422	CHEMICAL NAME OR FAMILY: Phenolic Resin
FORMULA: Complex	TRADENAME:
DOT SHIPPING NAME: Resin Solution-UN1866	DOT HAZARD CLASS: Flammable Liquid

Section II — IMPORTANT COMPONENTS

	PERMISSABLE EXPOSURE CONCENTRATION
Phenolic Resin - 58%	Not established
Free Phenol - 10% max.	5 ppm (ACGIH)
Methanol - 21%	200 ppm (ACGIH)
Free Formaldehyde - 1% max.	3 ppm (OSHA) 1 ppm (ACGIH)
	Potential Carcinogen (IARC-NTP)
Water - 10%	Not established

Section III — PHYSICAL DATA

BOILING POINT (°F): 170-190	SPECIFIC GRAVITY (H_2O = 1): 1.070 - 1.090
VAPOR PRESSURE (mm Hg): 100 mm @ *21.2°F	PERCENT VOLATILE BY VOLUME (%): wgt. 42
VAPOR DENSITY (AIR = 1): * 1.11	EVAPORATION RATE: Slower than ether
SOLUBILITY IN WATER: Insoluble	*Methanol
APPEARANCE AND ODOR: Amber liquid - methanol phenol odor	

Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION	FLASH POINT	LEL
1C	75°F	6.0

EXTINGUISHING MEDIA

Foam, CO_2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapors may form an explosive mixture in air.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear self-contained breathing apparatus to avoid inhalation of smoke or vapors.

Plyophen 94-422

Section V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II.

EFFECTS OF OVEREXPOSURE

Contact with skin may cause irritation or rash. Eyes - severe irritation with possible permanent injury. Heated vapors may cause irritation of eyes, nose and throat.

EMERGENCY AND FIRST AID PROCEDURES

Remove to well ventilated area. Wash skin with soap and water at once. If ingested, call a physician. Flush eyes with water for fifteen minutes, call a physician. Inhalation, provide fresh air and rest.

Section VI — REACTIVITY DATA

STABILITY ☐ UNSTABLE ☒ STABLE

CONDITIONS TO AVOID: Heat; direct sunlight; open flame; sparks; warm storage; ignition sources.

INCOMPATIBILITY (*Materials to avoid*): Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Under severe thermal degradation - molecular fragments of phenols, anhydrides, etc., may be formed.

HAZARDOUS POLYMERIZATION ☒ MAY OCCUR ☐ WILL NOT OCCUR

CONDITIONS TO AVOID: Open flame

Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Ventilate area. Remove all ignition sources. Absorb spill with suitable material and place in a closed container. Wear protective equipment during cleanup. Use non-sparking tools.

WASTE DISPOSAL METHOD

Incinerate in an approved incerator or dispose of in a chemical dump in accordance with local, state and federal regulations. Absorbed waste may be incinerated in accordance with local, state and federal regulations.

Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Should be worn to avoid breathing spray mists or heated vapors.

VENTILATION

Local exhaust and general ventilation recommended. Use explosion proof motors.

PROTECTIVE GLOVES: Chemical resistant plastic or rubber.

EYE PROTECTION: Chemical goggles. Eye wash fountain.

OTHER PROTECTIVE EQUIPMENT: As required to prevent skin contact. Safety shower.

Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid prolonged or repeated inhalation of spray mists & heated vapors.

OTHER PRECAUTIONS

Handle as a flammable liquid.

MATERIAL SAFETY DATA SHEET

MSDS NUMBER C-7

SECTION I MATERIAL IDENTIFICATION

PRODUCT/ CHEMICAL NAME: Isopropanol/Isopropyl Alcohol

PRODUCT/ CHEMICAL SYNONYMS: 2-Propanol/Dimethyl Carbinol

CHEMICAL FAMILY/ FORMULA: Alcohol/$(CH_3)_2$ CHOH

OTHER IDENTIFICATION: IPA: CAS #67-63-0

MATERIAL USE OR OCCURENCE: Used in Manufacture of Acetone: Solvent

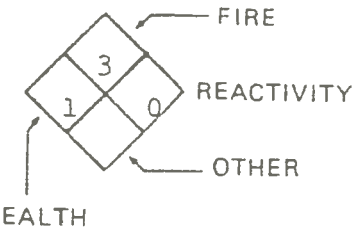
24 HOUR EMERGENCY INFORMATION

CLARK 312 - 385-5000

CHEMTREC 800 - 424-9300

HAZARDS:

4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = LEAST



SECTION II INGREDIENTS

COMPONENT	%	TLV (Units)	COMPONENT	%	TLV (Unit
Isopropyl Alcohol	100%	400 PPM	(Listed in the NTP Annual Report on Carcinogens)		

SECTION III PHYSICAL DATA

BOILING POINT: 180 °F 82 °C	MELTING POINT: -128 °F -89 °C	VAPOR PRESSURE: 33 mm Hg. @ 68 20
SPECIFIC GRAVITY (H_2O = 1): 0.78	VOLATILE BY VOLUME: > 99 %	VAPOR DENSITY (AIR = 1): 2.07
SOLUBILITY IN WATER: Miscible in All Proportions	EVAPORATION RATE (Ethyl Ether = 1): 7.7	

APPEARANCE AND ODOR: Colorless Liquid with an Odor of Rubbing Alcohol

SECTION IV FIRE AND EXPLOSION DATA

FLASH POINT AND METHOD	IGNITION TEMPERATURE	FLAMMABLE LIMITS (%)	LEL	UE
53°F (Closed Cup) 12°C	750°F - 399°C		2.0	12.

EXTINGUISHING MEDIA: Dry Chemical, Foam, Carbon Dioxide

SPECIAL FIREFIGHTING PROCEDURES AND PRECAUTIONS: Firemen fighting fires of Isoproply Alcohol sho use necessary protective equipment and breathing apparatus as would normally be used w fighting fires where there may be danger of breathing hazardous products of combustion

UNUSUAL FIRE AND EXPLOSION INFORMATION: Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

SECTION V — HEALTH INFORMATIC

OSHA PEL	ACGIH TLV	ACTION LEVEL
400 PPM	400 PPM - Skin	

HEALTH EFFECTS

	ACUTE	CHRONIC
INHALATION	Irritation, CNS Depression, Narcosis	No Known Effects
INGESTION	Nausea, Vomiting, Headache, Giddiness	No Known Effects
SKIN CONTACT	Possible Dermatitis; Readily Absorbed Through Intact Skin	Possible Dermatitis
EYE CONTACT	Irritation and Corneal Burns; Good Warning Properties	No Known Effects

FIRST AID PROCEDURES: Inhalation-Remove to fresh air. If breathing stopped, give artificial respiration. If breathing difficult, give oxygen w/trained personnel. Obtain medical attention. Ingestion-Induce vomiting. Obtain medical attention. Skin-Flush with water for 15 min. while removing clothing. Obtain medical attention. Eyes-Flush with water for 15 min. holding eye lids open. Obtain medical attention.

SECTION VI — REACTIVITY DATA

STABILITY		HAZARDOUS POLYMERIZATION	
☐ UNSTABLE	☒ STABLE	☐ MAY OCCUR	☒ WILL NOT OCC

CONDITIONS TO AVOID: Heat, Sparks, and Open Flames

INCOMPATABLES: Avoid strong oxidizers, aldehydes, concentrated nitric and sulfuric acids, halogens, and halogen compounds.

TYPICAL DECOMPOSITION PRODUCTS: Toxic gases and vapors (such as carbon monoxide) may be relea in a fire involving Isopropyl Alcohol.

SECTION VII — SPILL OR LEAK PROCEDURES

Eliminate sources of ignition. Vapor concentrations may be reduced by cover with alcohol type foam. Clean up and drain or pump to appropriate storage vessel for EPA approved disposal.

SECTION VIII — SPECIAL PROTECTION AND CONTROL INFORMATION

VENTILATION	LOCAL EXHAUST: Recommended - Indoors use lab hood - Outdoors work up-wind.		
	GENERAL EXHAUST: Ensure adequate ventilation.		
PERSONAL PROTECTIVE EQUIPMENT	RESPIRATORY PROTECTION: Use chemical cartridge or air supplied respirator depending on concentration. Use SCBA for emergency.		
	GLOVES: Impervious	EYE PROTECTION: Goggles or face shield	OTHER: Impervious jacke and pants if contact skin is likely

SECTION IX — OTHER INFORMATION

The information contained herein is based on data available at this time and is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Since information contai herein may be applied under conditions beyond our control, and with which we may be unfamiliar, no responsibility is assumed for the results of its use. The person receiving this information shall make his own determination of the suitability of the material for his particular purpose.

JAN 1985 010124

MATERIAL SAFETY DATA SHEET

58

RECEIVED NOV 05 1987

MSDS NUMBER: CR-3

SECTION I MATERIAL IDENTIFICATION

PRODUCT/ CHEMICAL NAME: Phenol Formaldehyde Resin #CR-3744

PRODUCT/ CHEMICAL SYNONYMS: Phenol Formaldehyde Polymer

CHEMICAL FAMILY/ FORMULA: Phenolic Resins $(C_6H_6O \cdot CH_2O)_x$

OTHER IDENTIFICATION: CAS #9003-35-4

MATERIAL USE OR OCCURENCE:

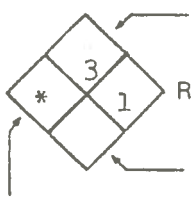
24 HOUR EMERGENCY INFORMATION

CLARK 312 - 385 5000

CHEMTREC 800 - 424-9300

HAZARDS:

4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = LEAST



* Not established for mixture

SECTION II INGREDIENTS

COMPONENT	%	TLV (Units)	COMPONENT	%	TLV (Units
Phenol	<10%	5 PPM			
Formaldehyde	0.5% Max	2 PPM	(Listed in the NTP Annual Report on Carcinogens)		
Methanol	30.2%	200 PPM			

SECTION III PHYSICAL DATA

BOILING POINT: Not Available °F °C	MELTING POINT: Not Available °F °C	VAPOR PRESSURE: Not Available mm Hg @ °
SPECIFIC GRAVITY (H_2O = 1): 1.085	VOLATILE BY VOLUME: Not Available %	VAPOR DENSITY (AIR = 1): Not Available
SOLUBILITY IN WATER: None	EVAPORATION RATE (= 1): Not Available	

APPEARANCE AND ODOR: Amber Colored Liquid Having a Formaldehyde Odor

SECTION IV FIRE AND EXPLOSION DATA

FLASH POINT AND METHOD	IGNITION TEMPERATURE	FLAMMABLE LIMITS (%)	LEL	UE
63°F (Tag Closed Cup)	Not Available	Not Available		

EXTINGUISHING MEDIA: Carbon Dioxide, Foam, Dry Chemical, Water

SPECIAL FIREFIGHTING PROCEDURES AND PRECAUTIONS: Firemen fighting phenolic resin fires should use necessary protective equipment and breathing apparatus as would normally be used when fighting fires where there may be danger of breathing hazardous products of combustion. Avoid contamination of sewers and streams with runoff.

UNUSUAL FIRE AND EXPLOSION INFORMATION: Exotherm potential-Solidifies upon heating or exposure to acid or basic media. Keep away from fire, sparks and hot surfaces. In closed contair the possibility exists of pressure build-up from heat exposure.

SECTION V — HEALTH INFORMATION

OSHA PEL	ACGIH TLV	ACTION LEVEL
Not estab. for mixture See MSDS of indiv. ingredients	Not estab. for mixture See MSDS of indiv. ingredients	Not estab. for mixture. See MSDS of indiv. Ingredients.

HEALTH EFFECTS

	ACUTE	CHRONIC
INHALATION	SEE MSDS OF INDIVIDUAL INGREDIENTS	
INGESTION	" " " "	"
SKIN CONTACT	" " " "	May cause sensitization/dermatitis with overexposure
EYE CONTACT	SEE MSDS OF INDIVIDUAL INGREDIENTS	

FIRST AID PROCEDURES ▸ Inhalation-Remove to fresh air. If not breathing give artificial respiration. If breathing difficult, give oxygen w/trained personnel. Obtain medical attenti Ingestion-Induce vomiting. Obtain medical attention. Skin-Flush with water for 15 min. while removing clothing. Apply 50% isopropanol/water solution to remove resin. Obtain medical attention. Eyes-Flush with water for 15 min. holding eye lids open. Obtain medica attention.

SECTION VI — REACTIVITY DATA

STABILITY	HAZARDOUS POLYMERIZATION
☐ UNSTABLE ☒ STABLE	☒ MAY OCCUR ☐ WILL NOT OCCUI

CONDITIONS TO AVOID ▸ Strong Acids and Bases. Temperatures Above the Boiling Point of Methanol.

INCOMPATABLES ▸ Strong Acids and Bases, Water

TYPICAL DECOMPOSITION PRODUCTS ▸ Phenol, Formaldehyde, Carbon Monoxide, Carbon Dioxide, Methanol, Water

SECTION VII — SPILL OR LEAK PROCEDURES

Eliminate sources of ignition. Vapor concentrations may be reduced by covering with alcohol-type foam. Clean up and drain or pump to appropriate storage vessel for EPA approved disposal. If solid, handle accordingly and store for EPA approved disposal.

SECTION VIII — SPECIAL PROTECTION AND CONTROL INFORMATION

VENTILATION	LOCAL EXHAUST ▸ Recommended-Indoors use lab hood - Outdoors work up-wind.		
	GENERAL EXHAUST ▸ Ensure adequate ventilation.		
PERSONAL PROTECTIVE EQUIPMENT	RESPIRATORY PROTECTION ▸ Use chemical cartridge or air supplied respirator depending on concentration. Use SCBA for emergency.		
	GLOVES ▸ Impervious	EYE PROTECTION ▸ Goggles or face shield	OTHER ▸ Impervious jacke and pants if contact w/ skin is likely

SECTION IX — OTHER INFORMATION

The information contained herein is based on data available at this time and is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Since information contain herein may be applied under conditions beyond our control and with which we may be unfamiliar, no responsibility is assumed for the results of its use. The person receiving this information shall make his own determination of the suitability of the material for his particular purpose.

MATERIAL SAFETY DATA SHEET

Borden Chemical, Division of Borden, Inc
180 EAST BROAD STREET, COLUMBUS, OHIO 43215

Emergency Telephone
(614) 457-5200
(OPERATION ALERT)

010114

THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 REQUIRES THAT THE INFORMATION CONTAINED ON THIS SHEET BE MADE AVAILABLE TO YOUR WORKERS.

INSTRUCT YOUR WORKERS TO HANDLE THIS PRODUCT PROPERLY

FOR INDUSTRIAL USE ONLY

Norplex Division
The Signal UOP Group
North East County Road
Postville, IA. 52662

Attn: Plant Manager

NAME: DURITE LV-1896 PAGE 1
TYPE: LIQUID PHENOLIC RESIN 11-Dec-85
APPLICATION: INDUSTRIAL LAMINATING VARNISH

SIGNAL WORD

DANGER!

THIS MATERIAL IS A "HEALTH HAZARD" AND/OR A "PHYSICAL HAZARD" AS DETERMINED WHEN REVIEWED ACCORDING TO THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION 29 CFR PART 1910.1200 "HAZARD COMMUNICATION" STANDARD.

CHEMICAL HAZARD RATING

HEALTH=4(EXTREME)
FIRE=3(HIGH)
REACTIVITY=0(LEAST)

29CFR1910.1200 HAZARDOUS INGREDIENTS/REPORTED HEALTH EFFECTS

CAS REGISTRY NO. MATERIAL DESCRIPTION

67-56-1 METHANOL
MAY CAUSE BLINDNESS IF SWALLOWED.
CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. SIGNS AND SYMPTOMS MAY INCLUDE HEADACHE, DIZZINESS, NAUSEA, VOMITING AND DROWSINESS.
ACGIH EXPOSURE LIMIT: SKIN - 200 PPM, 8-HR TWA
OSHA 29CFR1910 EXPOSURE LIMIT: 200 PPM, 8-HR TWA
NIOSH DOCUMENT NUMBER: 76-148

108-95-2 PHENOL
ACGIH EXPOSURE LIMIT: SKIN - 5 PPM, 8-HR TWA
OSHA 29CFR1910 EXPOSURE LIMIT: SKIN - 5 PPM, 8-HR TWA
NIOSH DOCUMENT NUMBER: 76-196

PHYSICAL DATA

APPEARANCE	CLEAR AMBER LIQUID
SPECIFIC GRAVITY @ 25/25 C	1.065-1.080
pH @ 25 C	7.4-8.4
SOLIDS, 135C (PHENOLIC RESINS)	60-64%
FORMALDEHYDE, FREE (PF RESINS)	0-1%
VISCOSITY, BROOKFIELD	100-250 CPS (RVF1/20/25C)

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FOR INDUSTRIAL USE ONLY

NAME: DURITE LV-1896
TYPE: LIQUID PHENOLIC RESIN
APPLICATION: INDUSTRIAL LAMINATING VARNISH

PHYSICAL DATA

CONTINUED

FLASHPOINT	58 F (SETA)
FREE PHENOL, G.C.	0-6%
STORAGE LIFE AT 70F	NOT RECOMMENDED
DOT49CFR-173.115 FLAMMABLE LIQUID	UN1993, RQ PHENOL

ACUTE HEALTH HAZARD DATA

SKIN ABSORPTION: MAY BE FATAL IF ABSORBED THROUGH SKIN.
INGESTION: HARMFUL IF SWALLOWED.
INHALATION: HARMFUL IF INHALED.
SKIN: CAUSES SEVERE BURNS.
EYES: CAUSES SEVERE BURNS.

HANDLING PRECAUTIONS

SKIN ABSORPTION: DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
INHALATION: DO NOT BREATHE VAPOR.
USE WITH ADEQUATE VENTILATION.
SKIN: DO NOT GET ON SKIN.
EYES: DO NOT GET IN EYES.
WASH THOROUGHLY AFTER HANDLING.

EMERGENCY AND FIRST AID PROCEDURES

INTERNAL: IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SKIN ABSORPTION: *POISON* CALL A PHYSICIAN. IN CASE OF CONTACT, IMMEDIATEY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE REUSE. DESTROY CONTAMINATED SHOES.

INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

SKIN CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. WASH CLOTHING BEFORE REUSE. DESTROY CONTAMINATED SHOES.

EYE CONTACT: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. EYELIDS SHOULD BE HELD APART DURING IRRIGATION TO INSURE WATER CONTACT WITH ENTIRE SURFACE OF EYES AND LIDS. CALL A PHYSICIAN.

MATERIAL SAFETY DATA SHEET

Borden Chemical, Division of Borden, Inc
180 EAST BROAD STREET, COLUMBUS, OHIO 43215

Emergency Telephone
(614) 457-5200
(OPERATION ALERT)

THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 REQUIRES THAT THE INFORMATION CONTAINED ON THIS SHEET BE MADE AVAILABLE TO YOUR WORKERS.

INSTRUCT YOUR WORKERS TO HANDLE THIS PRODUCT PROPERLY

FOR INDUSTRIAL USE ONLY

NAME: DURITE LV-1896
TYPE: LIQUID PHENOLIC RESIN
APPLICATION: INDUSTRIAL LAMINATING VARNISH

FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE.

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS, FLAME AND OTHER IGNITION SOURCES INCLUDING PILOT LIGHTS, HEATERS, CIGARETTES, ELECTRIC MOTORS AND STATIC DISCHARGE. VAPOR IS HEAVIER THAN AIR AND MAY SETTLE IN LOW PLACES OR TRAVEL A LONG DISTANCE TO A SOURCE OF IGNITION AND FLASHBACK.

IN CASE OF FIRE, USE WATER SPRAY, DRY CHEMICAL, "ALCOHOL" FOAM OR CO2. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

REACTIVITY DATA

NORMALLY STABLE AS DEFINED IN NFPA 704-12(4-3.1).

MAJOR DECOMPOSITION PRODUCTS: CO, CO2, ALDEHYDES (INCLUDING FORMALDEHYDE), PARTICULATE MATTER AND OTHER ORGANIC COMPOUNDS.

SPECIAL PROTECTION INFORMATION

WEAR FULL PROTECTIVE SUIT & BOOTS IF CONTACT IS LIKELY.

APPROVED RESPIRATORY PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL.

USE GOGGLES OR FACE SHIELD IF SPLASHING IS LIKELY.

WEAR IMPERVIOUS GLOVES AS REQUIRED TO PREVENT SKIN CONTACT.

WEARING SAFETY GLASSES, SAFETY SHOES, HARD HATS AND SUITABLE CLOTHING IS STANDARD PRACTICE IN MANY INDUSTRIAL OPERATIONS.

SPILL OR LEAK PROCEDURES

ELIMINATE ALL IGNITION SOURCES.

LARGE QUANTITIES: ENCLOSE WITH DIKING MATERIAL TO PREVENT SEEPAGE INTO NATURAL BODIES OF WATER, THEN CONSULT BORDEN, INC.

SMALL QUANTITIES: SOAK UP WITH ABSORBENT MATERIAL AND REMOVE TO A CHEMICAL DISPOSAL AREA.

WASTE DISPOSAL METHOD

RECOVER FREE LIQUID. ABSORB RESIDUE AND DISPOSE OF ACCORDING TO LOCAL, STATE, AND FEDERAL REQUIREMENTS.

EMPTY CONTAINER: MAY CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEARBY.

MATERIAL SAFETY DATA SHEET

Borden Chemical, Division of Borden, Inc
180 EAST BROAD STREET, COLUMBUS, OHIO 43215

Emergency Telephone
(614) 457-5200
(OPERATION ALERT)

THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 REQUIRES THAT THE INFORMATION CONTAINED ON THIS SHEET BE MADE AVAILABLE TO YOUR WORKERS.

INSTRUCT YOUR WORKERS TO HANDLE THIS PRODUCT PROPERLY

FOR INDUSTRIAL USE ONLY

APPLICATION: INDUSTRIAL LAMINATING VARNISH

STORAGE PRECAUTIONS

STORE IN A COOL PLACE.
KEEP DRUM OUT OF SUN AND AWAY FROM HEAT.

DOT CLASSIFICATION

FLAMMABLE LIQUID.

059<M>61-1896.-. /19-Nov-85
03:40 PM

DMF
Chemical

Owner Date

JAN 1985

010502
010503
010504
010505

NOV 05 1987

Air Products

MATERIAL SAFETY DATA SHEET

1-3-85

Air Products and Chemicals Inc.
P.O. Box 538
Allentown, PA 18105

EMERGENCY TELEPHONE NUMBERS
800-523-9374 (except Pennsylvania)
800-322-9092 (Pennsylvania only)
215-481-4911 (outside U.S.A.)

DMF

DIMETHYLFORMAMIDE

I—PRODUCT IDENTIFICATION

Manufacturing Site
U.S. Highway 90
Pace, Florida

Business Contact
Marketing Manager
Alkyl Amines
Industrial Chemicals Department

Sales Office
P.O. Box 538
Allentown, Pennsylvania 18105

Sales Phone
(215) 481-4911

Issue Date, Revision 3
October 1983

Chemical Names and Synonyms
N,N-Dimethylformamide
DMF

Chemical Family
Alkyl Amides

Formula
$(CH_3)_2NCHO$
C_3H_7NO

Chemical Abstract Registry Numbers
68-12-2

II—HAZARDOUS INGREDIENTS

Dimethylformamide is a single component liquid. The liquid and its vapors are combustible and are harmful if inhaled or absorbed through the skin.

III—PHYSICAL DATA

Appearance	Colorless, mobile liquid
Odor	Weak, ammonia-like
pH of 0.5M Solution in Water	6.7
Solubility in Water	Infinite
Other Solubilities	Alcohol, chloroform, benzene, ether, acetone
Boiling Point	307.4°F (153°C)
Melting Point	−77.8°F (−61°C)
Vapor Pressure	3.7mm Hg at 77°F
Vapor Density (Air = 1)	2.51
Specific Gravity (Water = 1)	0.9445 25°/4°C
% Volatile by Volume	100
Evaporation Rate (Butyl Acetate = 1)	0.17

IV—FIRE AND EXPLOSION DATA

Flash Point	
(Tag Open Cup)	153°F (67.2°C)
(Tag Closed Cup)	136°F (58°C)
Autoignition Temperature	833°F (445°C)
Flammable Limits in Air at 100°C	Lower 2.2% Upper 15.2%
DMF vapors are heavier than air	

According to Occupational Safety and Health Administration (OSHA) Standards (29 CFR 1910.106), dimethylformamide (DMF) is a Class II combustible liquid, and upon ignition gives rise to a Class B fire. Carbon dioxide, dry chemical or water spray (fog) are the recommended extinguishers. Containers exposed to fire should be cooled with water spray.

For indoor fires, fire fighters should wear a self-contained breathing apparatus to prevent breathing of vapors and toxic carbon monoxide gas generated from the decomposition of the product by heat. Chemical safety goggles and butyl or latex rubber protective clothing should be worn when there is danger of the product contacting the skin. Contain all discharged liquids for proper waste disposal (See Section VII).

Contact with halogenated hydrocarbons plus iron may result in fire and explosion. *Do not use a carbon tetrachloride extinguisher for DMF fires.*

V—HEALTH HAZARD INFORMATION

The Threshold Limit Value (TLV) for DMF is 10 ppm (American Conference of Governmental Industrial Hygienists). This concentration in the work atmosphere is considered to be safe, provided personnel are adequately protected from absorption through the skin.

DMF is not a primary skin irritant but absorption through the skin is harmful.

Acute Toxicity Data

Oral LD_{50}	2,800 mg/kg (in rats)[1]
Dermal LD_{50}	5,000 mg/kg (in rabbits)[1]
Inhalation LC_{50}	Approx 3.6 mg/liter[2]

Isolated exposures to DMF have not been shown to be particularly hazardous. Laboratory studies indicate that systemic injury can result when DMF is inhaled or absorbed through the skin over a period of time. Liver damage has been demonstrated in experiments with animals by allowing prolonged inhalation at 100 ppm[3]. Overexposed plant workers have reported nausea, vomiting and gastric burning.

There is evidence that DMF is embryotoxic in laboratory animals at very high doses. DMF has not been shown to be teratogenic; however, monomethyl formamide (MMF), a metabolite in animals, may have teratogenic properties. While neither embryotoxic nor teratogenic phenomena have been observed in humans, their possibility cannot be excluded. Dose levels of significance in this regard are unclear. There is a significant body of medical opinion which would recommend the exclusion of pregnant women and women of child-bearing potential from areas in which exposure to DMF may occur.

First Aid

If inhaled, remove to fresh air. If breathing stops, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy shoes. Call a physician.

If swallowed, induce vomiting immediately by giving 2 glasses of water and sticking finger down throat. Call a physician. Never give anything by mouth to an unconscious person.

VI—REACTIVITY DATA

The product is a stable liquid solvent having a low vapor pressure.

Aluminum triethyl and DMF form an explosive mixture when heated together.

Magnesium nitrate and DMF undergo spontaneous decomposition.

Carbon tetrachloride and DMF react in the presence of iron at elevated temperatures. Such reaction may cause fire or explosion. Care should be exercised in the combination of any halogenated hydrocarbon with DMF in the presence of metal.

Explosive reaction and fire may result when DMF is mixed with oxidizing agents. Typical oxidizing agents include perchlorates, nitrates, permanganates, chromates, nitric acid, chromic acid, halogens and some cleaning solutions such as potassium dichromate/sulfuric acid and aqua regia.

Highly toxic carbon monoxide vapors are generated when DMF is heated to decomposition.

Sodium and DMF undergo vigorous reaction when heated together.

VII—SPILL OR LEAK PROCEDURES

Personnel attending to product spills or leaks should wear full body, eye, and respiratory protection equipment including butyl rubber gloves, boots and apron, chemical safety goggles, and a self-contained breathing apparatus. Although DMF is not highly volatile, its vapors are harmful.

Spills should be contained and prevented from entering water bodies and drinking water supplies. Spilled and contaminated materials should be placed in sealable steel containers labeled "combustible materials" in preparation for proper disposal.

Small spills may be scooped into a steel was disposal container or absorbed onto paper, r moved to the outside, and burned. The incineratic should be designed for complete combustion material and meet environmental regulations.

Large volumes of spilled product and contam nated materials may be transferred to a steel pa or impermeable open pit and burned in an ap proved incinerator. Addition of flammable solve (e.g. alcohol) facilitates combustion. Nitrogen o: ides are emitted upon combustion. Liquid was may be sprayed directly into an incinerator equippe to prevent nitrogen oxide pollution.

All federal, state and local regulations regardir environmental pollution abatement should be fo lowed when disposing of the product.

Recovery of DMF from water may be performe by simple distillation. Methylene chloride extrac tion proves to be a feasible method for extractio of DMF in aqueous solutions containing high solid or salts.

VIII—SPECIAL PROTECTION INFORMATION

Although DMF is not highly volatile, its vapors ar harmful and are absorbed through the skin. A loca exhaust system capable of maintaining the leve of DMF vapor below 10 ppm (time-weighted av erage) is required. CAUTION: Although the vapo concentration may be below 10 ppm, additiona exposure via absorption through the skin is dan gerous.

During emergencies such as fires and spills, o when the vapor concentration in the air may ex ceed 10 ppm, complete body protection is required to prevent absorption through the skin. Butyl o latex rubber protective clothing should be worr when there is danger of the liquid directly con tacting the skin. A self-contained breathing ap paratus should be worn. Leather absorbs DMF, sc contaminated shoes must be discarded.

IX—SPECIAL PRECAUTIONS

Label

NA1993

DIMETHYLFORMAMIDE

WARNING! VAPOR IS HARMFUL MAY BE ABSORBED THROUGH SKIN COMBUSTIBLE LIQUID

Avoid breathing vapor.
Use with adequate ventilation.
Avoid contact with eyes, skin, and clothing.
Wash clothing before reuse.
Discard contaminated shoes.
Keep away from heat, sparks and open flame.

First Aid: If inhaled, remove patient to fresh air. If not breathing, give artificial respiration (e.g., mouth-to-mouth). If breathing is difficult, give oxygen. Call a physician.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Discard contaminated shoes.

Other Handling and Storage Requirements

Prohibit smoking or open flame in use and storage area.

Store in tightly closed containers in a cool dark space.

Emergency showers and respiratory equipment should be readily available.

Empty containers may contain flammable or toxic vapors. Flush empty containers with water to remove residual combustible liquid or vapors (See Section VII for rinse water disposal).

For DMF transported in containers over 110 gallons, the (D.O.T.) proper shipping name is Combustible Liquid, NOS, NA1993. In containers of 110 gallons or less, transportation is not regulated.

X—REFERENCES

(1) Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, 1978.

(2) Independent Laboratory Results. Report available upon request.

(3) Kittila, R.S., Dimethylformamide-Chemical Uses, DuPont, Wilmington, Delaware, 1967, pp 221-224.

Air Products

Printed in U.S.A. MSDS-402

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

PRODUCT NAME: DOWANOL (R) PM GLYCOL ETHER

Effective Date: 09/30/81 Date Printed: 11/25/85 Product Code: 22473

1. INGREDIENTS:

Propylene glycol methyl ether, (essen.)	100%

2. PHYSICAL DATA:

BOILING POINT: 248.3F, 120C
VAP PRESS: 12.5 mmHg @ 25C
VAP DENSITY: 3.12
SOL. IN WATER: Infinitely.
SP. GRAVITY: 0.917 @ 25/25C
APPEARANCE: Water white - ether liquid.
ODOR: Not available.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 94F, 34C
METHOD USED: TCC

FLAMMABLE LIMITS
LFL: 1.6 (Cal.)
UFL: 13.8 (Cal.)

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Keep vapors away from possible ignition sources.

FIRE-FIGHTING EQUIPMENT: Not available.

(Continued on Page 2)

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID)

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS:

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Add absorbent. Remove with rubber shovel.

DISPOSAL METHOD: Burn in accordance with local laws.

6. HEALTH HAZARD DATA:

EYE: Up to slight irritation, no corneal injury likely; vapors may be irritating at high concentrations.

SKIN CONTACT: Prolonged and repeated contact: slight irritation.

SKIN ABSORPTION: Absorption can occur, but toxicity is very low. LD 50 (rabbits): 13 to 14 g/kg.

INGESTION: Low single dose toxicity. LD50 for rats 6.6 g/kg.

INHALATION: ACGIH TLV 100 ppm disagreeable odor.

SYSTEMIC & OTHER EFFECTS: Irritation to eyes and in some cases nausea. Higher levels - anesthesia.

(Continued on Page 3)

7. FIRST AID:

EYES: Irrigation of the eye immediately with water for five minutes is good safety practice.

SKIN: Contact will probably cause no more than irritation. Wash off in flowing water or shower. Wash clothing before reuse.

INGESTION: Low in toxicity. Induce vomiting if large amounts are ingested.

INHALATION: Remove to fresh air if effects occur. Call physician and/or transport to medical facility. If respiration stops, give mouth-to-mouth resuscitation.

NOTE TO PHYSICIAN:
Eyes: May cause mild irritation. Stain for evidence of corneal injury. Injury is unlikely.
Skin: May cause mild irritation. If rash is present, treat as any contact dermatitis. Not likely to be absorbed in acutely toxic amounts.
Respiratory: Good warning properties. Anesthetic or narcotic effect may occur at very high concentrations. Mechanical support of respiration may be needed. Administer oxygen if available.
Oral: Low in toxicity.
Systemic: Rat studies suggest liver and kidney may be target organs with overexposure. Human effects not established. No specific antidote. Treatment based on sound judgment of physician and the individual reactions of the patient.

8. HANDLING PRECAUTIONS:

VENTILATION: Recommend control of vapors to suggested guide.

RESPIRATORY PROTECTION: Approved respiratory protection required in absence of proper environmental control. For emergencies, a positive-pressure breathing apparatus or a full-face respirator is recommended.

SKIN PROTECTION: Clean, body-covering clothing.

(Continued on Page 4)

8. HANDLING PRECAUTIONS: (CONTINUED)

EYE PROTECTION: Safety glasses without side shields.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Ground all equipment. Handle with reasonable care. Avoid breathing vapors.

MSDS STATUS: Revised 2, 3, 6, 7 and 8.

01424

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

PRODUCT NAME: ACETONE, SYNTHETIC

Effective Date: 05/30/85 Date Printed: 11/25/85 Product Code: 00259

1. INGREDIENTS:

Acetone CAS# 000067-64-1 99.5%

Substances listed in the Ingredients Section are those identified as being present at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens cited in OSHA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200(I).

2. PHYSICAL DATA:

BOILING POINT: 133F, 56C
VAP PRESS: 181.7 mmHg @ 20C
VAP DENSITY: 2.00
SOL. IN WATER: Completely miscible.
SP. GRAVITY: 0.7880 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Sweetish.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: OF, -18C
METHOD USED: TCC

FLAMMABLE LIMITS
LFL: 2.6 %
UFL: 12.8 %

EXTINGUISHING MEDIA: Alcohol foam, carbon dioxide, and dry chemical.

FIRE & EXPLOSION HAZARDS: Water can be used to cool fire-exposed containers, to protect personnel and to disperse

(Continued on Page 2)

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

vapors and spills. The autoignition temperature is 869F (465C).

FIRE-FIGHTING EQUIPMENT: Firemen should wear normal protective equipment and positive pressure self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Keep away from flames and spark-producing equipment.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Nitric plus acetic acids and nitric plus sulfuric acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide and some carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spill - allow to evaporate if it can be done safely. Otherwise soak up with absorbent material and scoop into drums. Large spill - dike and pump into drums using air-operated or other non-spark-producing pump. Prevent acetone from entering drains or sewers.

DISPOSAL METHOD: Burn in incinerator. Follow all local, state, and federal requirements for disposal.

6. HEALTH HAZARD DATA:

EYE: May cause moderate eye irritation and moderate corneal injury. Vapors may irritate eyes.

SKIN CONTACT: Prolonged exposure not likely to cause significant

(Continued on Page 3)

6. HEALTH HAZARD DATA: (CONTINUED)

skin irritation. May cause drying or flaking of skin.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD50 for skin absorption in rabbits is 20,000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is >6000 mg/kg. No hazards anticipated from ingestion incidental to industrial exposure.

INHALATION: A single brief (minutes) inhalation exposure is not likely to cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract. Excessive exposure may cause anesthetic or narcotic effect.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposures to high amounts may cause anesthetic or narcotic effect. Repeated excessive exposures to smaller amounts may cause irritation to eyes and respiratory tract. Did not cause cancer in long-term animal studies. Results of in vitro ("test tube") mutagenicity tests have been negative.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to

(Continued on Page 4)

7. FIRST AID: (CONTINUED)

reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV is 750 ppm. OSHA PEL is 1000 ppm.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary. Lethal concentrations may exist in areas with poor ventilation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face, supplied-air respirator.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Practice reasonable care to avoid eye and skin contact and to avoid breathing vapors. Use spark-resistant tools; no smoking area for handling and storage. Refer to the acetone product data bulletin.

MSDS STATUS: Revised 1.

(Continued on Page 5)

EXXON CHEMICALS

MEK
Chemical
Exxon
Owner

29 JAN 1985 NOV 05 1987

010434

Methyl Ethyl Ketone (MEK)
PRODUCT

MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor as "essentially similar" to Form LSB-00S-4)

SECTION I-IDENTIFICATION OF PRODUCT

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
EXXON CHEMICAL COMPANY U.S.A.	(713) 656-3600
ADDRESS *(Number, Street, City, State and ZIP Code)* 1333 W. LOOP S., HOUSTON, TEXAS 77027	

TRADE NAME	CHEMICAL NAME
Methyl Ethyl Ketone, MEK	2-Butanone
CHEMICAL FAMILY	CHEMICAL FORMULA
Ketone	$CH_3COCH_2CH_3$

SECTION II-HAZARDOUS COMPONENTS OF MIXTURES

The precise composition of this product is proprietary information. A more detailed disclosure will be provided by Exxon Medical or Industrial Hygiene personnel to qualified Medical or Industrial Hygiene personnel as privileged information upon request in case of need for specific treatment.

Not Applicable to High Purity Chemicals

SECTION III-TYPICAL PHYSICAL DATA

APPEARANCE AND ODOR	SPECIFIC GRAVITY
Clear, colorless liquid, lacquer thinner type	0.807 at 20/20°C (68/68°F)
BOILING POINT (°F) 79.6°C (175.4°F)	PERCENT VOLATILE (BY VOLUME) 100%
VAPOR PRESSURE 190 mm Hg at 38°C (100°F)	EVAPORATION RATE (n-BUTYL ACETATE = 1) 5.6
VAPOR DENSITY (AIR 1) 2.5	
SOLUBILITY IN WATER Appreciable (26 wt.%)	

SECTION IV-FIRE AND EXPLOSION HAZARD DATA

FLASH POINT *(Method)*	FLAMMABLE LIMITS (PERCENT BY VOLUME)	Lel	Uel
Tag closed cup -6°C (21°F)	At 25°C (77°F)	1.8	10.0

FIRE EXTINGUISHING MEDIA

Dry chemical or alcohol-type foam. Waterspray may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Use waterspray to cool fire-exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Respiratory protection required for fire fighting personnel.

Stay upwind, if possible. Cool exposed tanks with water.

HAZARDOUS PRODUCTS OF COMBUSTION

No unusual products of combustion.

(OVER)

831-0035A (BACK)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 200 ppm

EFFECTS OF OVEREXPOSURE
ACUTE: Vapor irritates eyes, nose & throat. Liquid will damage eye tissu
CHRONIC: Liquid is irritating to skin, causing dermatitis.

EMERGENCY AND FIRST AID PROCEDURES
If overcome by vapors, remove to fresh air and if breathing stopped, give artificial respiration. Keep individual calm. Call a physician. If skin contact occurs, wash affected parts thoroughly with soap and water; launder clothing before re-use. If eye contact occurs, flush with water for at least 15 minutes and call a physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	Not Applicable

INCOMPATIBILITY (MATERIALS TO AVOID FOR PURPOSES OF TRANSPORT, HANDLING & STORAGE ONLY)
Strong oxidants, caustic, amines, alkanolamines, aldehydes, ammonia, will dissolve some plastics, rubber and coatings, chlorinated compounds.

HAZARDOUS DECOMPOSITION PRODUCTS
NONE

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Keep public away. Shut off source if possible to do so without hazard. Eliminate sources of ignition. Warn occupants of downwind areas of explosion hazard. Prevent liquid from entering sewers, watercourses or low areas.

WASTE DISPOSAL (INSURE CONFORMITY WITH LOCAL DISPOSAL REGULATIONS)
Contain spilled liquid with sand or earth. Dilute contained spill with water. Recover free liquid by pumping or with a suitable absorbant. Consult a disposal expert and ensure conformity to local regulation.

SECTION VIII - PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION
Use approved respiratory protection such as air-supplied mask if used in enclosed spaces.

VENTILATION		
	LOCAL EXHAUST: Face velocity >60 fpm in confined space	SPECIAL:
	MECHANICAL (General): Explosion-proof ventilation equipment	OTHER: No smoking or open lights

PROTECTIVE GLOVES: Chemically resistant gloves
EYE PROTECTION: Chemical splash goggles or face shield
OTHER PROTECTIVE EQUIPMENT: Usually not needed.

SECTION IX - HANDLING AND STORAGE PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep container closed when not in use. Do not handle or store near flame, heat or strong oxidants. Adequate ventilation required.

OTHER PRECAUTIONS
All handling equipment should be electrically grounded.

DATE OF ISSUE: October, 1977
☐ NEW ☒ REVISED SUPERSEDES 3/77

APPROVED BY: James W. Hammond
TITLE: Director of Industrial Hygiene

Form 5

75

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

OR-1301 METHANOL

DISTRIBUTED BY: HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE,WI 53226
(414) 257-2300
(414) 277-1311

MSDS#:HY8520K1301XX

PREPARED BY:LMT/JRS
11/26/85

MANUFACTURED BY: Celanese

SECTION I - PRODUCT INFORMATION

TRADE NAME: Methanol
CHEMICAL NAME & SYNONYMS: Methyl Alcohol
Wood Alcohol; Carbinol

CHEMICAL FAMILY: Alcohol

FORMULA: CH3OH

DOT PROPER SHIPPING NAME: METHANOL

D.O.T. HAZARD CLASS: FLAMMABLE LIQUID

D.O.T. IDENTIFICATION #: UN1230 D.O.T. LABEL: Flammable

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV (UNITS)
Methanol	100 %	200 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (DEG. F): 148.5
FREEZING POINT (DEG.F): -144
VAPOR PRESSURE (MM HG): 96 @ 20 C
VAPOR DENSITY (AIR=1) : 1.1
SOLUBILITY IN WATER: Complete

SPECIFIC GRAVITY: 0.792
PERCENT VOLATILE
BY VOLUME%: 100 %
EVAPORATION RATE(nBuAc): > 2

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

SECTION III - PHYSICAL DATA

APPEARANCE AND ODOR: Clear, colorless liquid. Mild odor.

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): 52 Deg. F. (TCC).

FLAMMABLE LIMITS LEL: 5.5 UEL: 36.5

EXTINGUISHING MEDIA: Water spray. Dry Chemical. Carbon Dioxide. Alcohol Foam.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area of unprotected personnel. Wear protective clothing including a NIOSH-Approved self-contained breathing apparatus. Cool fire-exposed containers with water spray. Run-off from fire control may cause pollution.

UNUSUAL FIRE & EXPLOSION HAZARDS: FLAMMABLE LIQUID. A vapor accumulation may flash and/or explode if ignited. Alcohol flames may be difficult to see because they are virtually colorless.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 200 ppm (OSHA 29 CFR 1910.2)
200 ppm (ACGIH 1985-86)

EFFECTS OF OVEREXPOSURE

EYE CONTACT: Short term liquid or vapor contact may result in slight irritation. Prolonged or repeated contact may be more irritating.

SKIN CONTACT: Prolonged and repeated contact with skin can cause defatting and drying of the skin which may result in skin irritation and dermatitis.

INHALATION: High concentrations or prolonged exposure to lower concentrations may be slightly irritating to mucous membranes.

SECTION V - HEALTH HAZARD DATA

Inhalation overexposure can lead to central nervous system depression producing effects such as headaches, nausea, dizziness and loss of consciousness.
INGESTION: Toxic by ingestion. May cause vomiting, nausea, and possibly death. May cause blindness.

EMERGENCY AND FIRST AID PROCEDURES
EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing with water. Call a physician immediately.
SKIN CONTACT: Flush area with water while removing contaminated clothing and shoes. Follow by washing with soap and water. Do not reuse clothing or shoes until cleaned. If irritation persists, get medical attention. Do not apply oils or ointments unless ordered by the physician.
INGESTION: If conscious, give large amounts of water, then induce vomiting by touching back of throat with finger. Keep head below hips to prevent aspiration of liquid into lungs. Get medical attention immediately.
INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. CALL A PHYSICIAN.

SECTION VI - REACTIVITY DATA

STABILITY: _X_STABLE ___UNSTABLE
CONDITIONS TO AVOID: Avoid contact with heat, sparks, and open flame.

INCOMPATABILITY: Strong Oxidizing Agents. Acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce Carbon Monoxide, Carbon Dioxide, and unidentifiable organic materials.

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MATERIAL SAFETY DATA SHEET

SECTION VI - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: __ MAY OCCUR _X_ WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
FLAMMABLE MATERIAL. Eliminate all sources of ignition. Evacuate unprotected personnel from area. Maintain adequate ventilation. Use proper Safety Equipment. Contain spill, place into drums for proper disposal. Soak up residue with non-flammable absorbent material. Place in non-leaking containers for immediate disposal. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs. Under EPA-CERCLA, releases to air, land or water which exceed the reportable quantity must be reported to the National Response Center, 800-424-8802. RQ = 1 lb (0.454 kg).

WASTE DISPOSAL METHOD: Observe all Local, State, and Federal Regulation Dispose of at approved Landfill Site or Waste Treatment Facility. Reclaim (recycle) solvent. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks or other sources of ignition. EPA-RCRA Hazardous Waste Number = U154.

SECTION VIII - SPECIAL PROTECTION INFORMATION

CONSULT SAFETY EQUIPMENT DISTRIBUTOR

RESPIRATORY PROTECTION: If TLV is exceeded wear: NIOSH-Approved self-contained breathing apparatus. NIOSH-Approved organic respirator.

VENTILATION: Maintain adequate ventilation. Keep levels below recommend TLV. Use explosion-proof equipment. Avoid mist formation.

SECTION VIII - SPECIAL PROTECTION INFORMATION

PROTECTIVE GLOVES: Neoprene. Polyvinyl Alcohol.

EYE PROTECTION: Chemical Safety Goggles. Face shield. Do not wear contact lenses.

OTHER PROTECTIVE EQUIPMENT: Eye-wash station. Safety shower. Rubber apron. Chemical safety shoes. Protective clothing.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
FLAMMABLE LIQUID. Store in cool, well-ventilated area away from all sources of ignition and out of direct sunlight. Ground all equipment to prevent accumulation of static charge. Keep containers tightly closed. Relieve pressure in drums weekly. Store away from incompatable materials.

OTHER PRECAUTIONS: Avoid contact with skin and eyes. Do not swallow. Use with adequate ventilation. Avoid prolonged or repeated breathing of vapors. Wash thoroughly after handling. Avoid dust or mist formation.

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

CARCINOGEN CONTENT

%	PPM	INGREDIENT	IARC	NTP	OSHA

NOTE : This product does not contain any known or potential carcinogens as listed in NTP, IARC, or OSHA.

LD50 ORAL : Rat: 13 gm/kg
LD50 SKIN : Rabbit: 20 gm/kg
LC50 INHALATION : Rat: 64000 ppm/4H

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MATERIAL SAFETY DATA SHEET

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

** ** ** ** ** ** ** ** ** ** **

The data in this Material Safety Data Sheet relates only to the specific material designated and does not relate to its use in combination with any other material or process. The data contained is believed to be correct. However, since conditions of use are outside our control it should not be taken as a warranty or representation for which Hydrite Chemical Co. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.

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MATERIAL SAFETY DATA

CELANESE CHEMICAL COMPANY, INC.
1250 WEST MOCKINGBIRD LANE
DALLAS, TEXAS 75247

n-Butyl Alcohol
Chemical

Owner Date

RECEIVED
REGION VII
NOV 05 1987

EMERGENCY TELEPHONE NO: 806-665-5522 | INFORMATION TELEPHONE NO: 214-689-4000 | REVISION DATE: 11/79

I. IDENTIFICATION

PRODUCT NAME: n-BUTYL ALCOHOL

CHEMICAL NAME: n-Butyl Alcohol

CHEMICAL FAMILY: Alcohols

FORMULA: $CH_3(CH_2)_2CH_2OH$

MOLECULAR WEIGHT: 74.12

SYNONYMS: 1-Butanol; Butyric Alcohol; Propyl Carbinol; 1-Hydroxybutane

DEPARTMENT OF TRANSPORTATION: HAZARD CLASSIFICATION: Flammable Liquid

SHIPPING NAME: Butyl Alcohol Flammable Liquid

CHEMICAL ABSTRACT REGISTRY NAME: Butanol

CHEMICAL ABSTRACT REGISTRY NUMBER: 71-36-3

II. PHYSICAL DATA

BOILING POINT, 760 mm. Hg: 117.5°C

FREEZING POINT: -89.8°C

SPECIFIC GRAVITY (H_2O = 1) @ 20/20°C: 0.8109

VAPOR PRESSURE AT 20°C: 4.39 mm Hg

VAPOR DENSITY (AIR = 1): 2.55

SOLUBILITY IN WATER % BY WT. @ 20°C: 7.8

PERCENT VOLATILES BY VOLUME: 100

EVAPORATION RATE BuAc = 1: 0.450

STATE: SOLID | LIQUID X | GAS

APPEARANCE AND ODOR: Clear, colorless liquid, alcohol-like odor.

III. HAZARDOUS INGREDIENTS

MATERIAL	HAZARD	%	CAS NO.	TLV[R]

IV. FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR, % BY VOLUME: LOWER 1.45 | UPPER 11.25

FLASH POINT (TEST METHOD): 97°F, TOC; 98°F, TCC

EXTINGUISHING MEDIA: Water spray, carbon dioxide, dry chemical for small fires. Alcohol or polymer foam for large fires. Addition of water will reduce intensity of flames.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

V. REACTIVITY DATA

STABILITY: UNSTABLE | STABLE X

CONDITIONS TO AVOID: Heat, sparks, open flame.

INCOMPATABILITY (MATERIALS TO AVOID): Inorganic acids, aldehydes, and isocyanates.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: MAY OCCUR | WILL NOT OCCUR X | CONDITIONS TO AVOID

None.

VI. HEALTH HAZARD DATA

PERMISSABLE EXPOSURE LEVEL (OSHA STD) 100 ppm, 8-hr. TWA

TLV® (THRESHOLD LIMIT VALUE) 50 ppm ceiling

SOURCE ACGIH-1979

OTHER

ACUTE EFFECTS OF EXPOSURE

INGESTION (SWALLOWING) Central nervous system depression. Symptoms more severe & prolonged than in ethanol intoxication. Irritation to mucous membranes.

INHALATION (BREATHING) Mildly irritating to nose & throat & mucous membranes. May cause symptoms similar to ingestion.

SKIN (CONTACT AND ABSORPTION) Dermatitis may result from repeated contact.

EYE (CONTACT) Mildly irritating.

CHRONIC EFFECTS OF EXPOSURE None currently known.

EMERGENCY AND FIRST AID PROCEDURES

EYE (CONTACT) Flush with water for at least 15 minutes. Contact a physician immediately.

SKIN (CONTACT) Wash contaminated area with water. Clothing should be washed before re-use.

INGESTION (SWALLOWING) Induce vomiting immediately; give 2 glasses water & stick finger down throat. Contact a physician immediately.

INHALATION (BREATHING) Remove patient from contaminated area. Give artificial respiration if breathing has stopped & contact a physician.

OTHER HEALTH HAZARDS

NOTES TO PHYSICIAN

Never give an unconscious person anything by mouth.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Eliminate ignition source. Contain spill for salvage or disposal. Use of any dilution water should be closely controlled to minimize spill volume. Avoid run-off into storm sewers and ditches which lead to natural waterways. Advise authorities of spill.

WASTE DISPOSAL METHOD

Chemical incinerator; biological treatment; landfill.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE) Use NIOSH approved organic vapor cartridge or canister respirator w/in use limitations of these devices; all other situations, self-contained breathing apparatus.

VENTILATION

LOCAL EXHAUST: Preferable

MECHANICAL (GENERAL): Acceptable

OTHER

PROTECTIVE GLOVES: Neoprene or rubber gloves.

EYE PROTECTION: Chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT

Impervious apron and boots; eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat and open flame. Avoid prolonged breathing of vapors. Avoid prolonged or repeated contact with skin.

OTHER PRECAUTIONS

Use spark-resistant tools.

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0104/4

MATERIAL SAFETY DATA SHEET

002460 TOLUENE PAGE: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

****

PRODUCT NAME: TOLUENE
CAS NUMBER: 108 88 3

NORPLEX DIVISION-UOP INC.
1300 NORPLEX DRIVE
LA CROSSE, WI 54601

05 50 038 6506040-
DATA SHEET NO: 0000565-005
LATEST REVISION DATE: 09/85-85252
PRODUCT: 2185000
INVOICE: 165622
INVOICE DATE: 02/01/85
TO:

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: AROMATIC HYDROCARBON

HAZARD CLASSIFICATION: (DJ) FLAMMABLE LIQUID (173.115)

SECTION II-HAZARDOUS COMPONENTS

INGREDIENT	% (BY WT)	PEL	TLV	NOTE
TOLUENE	100	200	100 PPM - SKIN	(1)

(1): SKIN ABSORPTION MAY POTENTIALLY CONTRIBUTE TO THE OVERALL EXPOSURE TO THIS MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT THE TLV IS NOT INVALIDATED.

SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
INITIAL BOILING POINT	FOR PRODUCT	232.00 DEG F (111.11 DEG C) @ 760.00 MMHG
VAPOR PRESSURE	FOR PRODUCT	22.00 MMHG @ 68.00 DEG F (20.00 DEG C)
VAPOR DENSITY	AIR = 1	3.2
SPECIFIC GRAVITY		.87+ @ 60.00 DEG F (15.55 DEG C)
PERCENT VOLATILES		100.00%
EVAPORATION RATE	(ETHYL ETHER = 1)	4.50

SECTION IV-FIRE AND EXPLOSION DATA

FLASH POINT(TCC) 45.00 DEG F
(7.22 DEG C)

EXPLOSIVE LIMIT (PRODUCT) LOWER - 1.2% UPPER - 7.0%

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

SPECIAL FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.

UNUSUAL FIRE & EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR MAY BE MOVED BY VENTILATION AND IGNITED BY PILOT LIGHTS, OTHER FLAMES, SPARKS, HEATERS, SMOKING, ELECTRIC MOTORS, STATIC DISCHARGE, OR OTHER IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.
ALL FIVE GALLON PAILS AND LARGER METAL CONTAINERS SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED.
NFPA CODES: HEALTH- 2 FLAMMABILITY- 3 REACTIVITY- 0

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL 200 PPM - SKIN

THRESHOLD LIMIT VALUE 100 PPM - SKIN

EFFECTS OF OVEREXPOSURE: FOR PRODUCT

EYES - CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS
BREATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE, POSSIBLE UNCONSCIOUSNESS, AND EVEN ASPHYXIATION.

CONTINUED ON PAGE: 2

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SECTION V-HEALTH HAZARD DATA (CONTINUED)

SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION

SKIN ABSORPTION

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.

LARGE SPILL: ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.

WASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

LARGE SPILL: DESTROY BY LIQUID INCINERATION
CONTAMINATED ABSORBENT MAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NITRILE RUBBER

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

OVEREXPOSURE TO MATERIAL HAS APPARENTLY BEEN FOUND TO CAUSE THE FOLLOWING EFFECTS IN LABORATORY ANIMALS:, LIVER ABNORMALITIES, KIDNEY DAMAGE, LUNG DAMAGE, SPLEEN DAMAGE

OVEREXPOSURE TO MATERIAL HAS BEEN SUGGESTED AS A CAUSE OF THE FOLLOWING EFFECTS IN HUMANS:, LIVER ABNORMALITIES

CONTINUED ON PAGE 3

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SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS (CONTINUED)

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH ASHLAND OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

 LAST PAGE--SEE ATTACHMENT PAGE ENCLOSED--LAST PAGE